

(No Model.)

J. E. CROOK.

CHAIN.

No. 354,046.

Patented Dec. 7, 1886.

Fig. 1. Fig. 2.

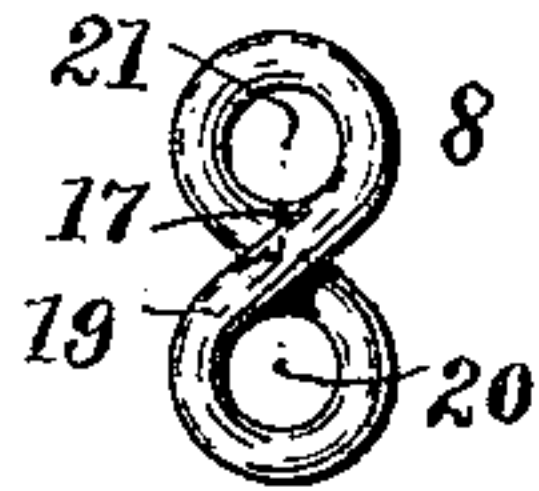
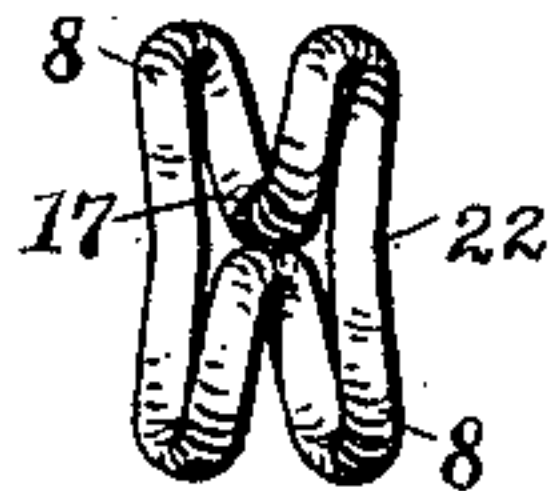


Fig. 3.

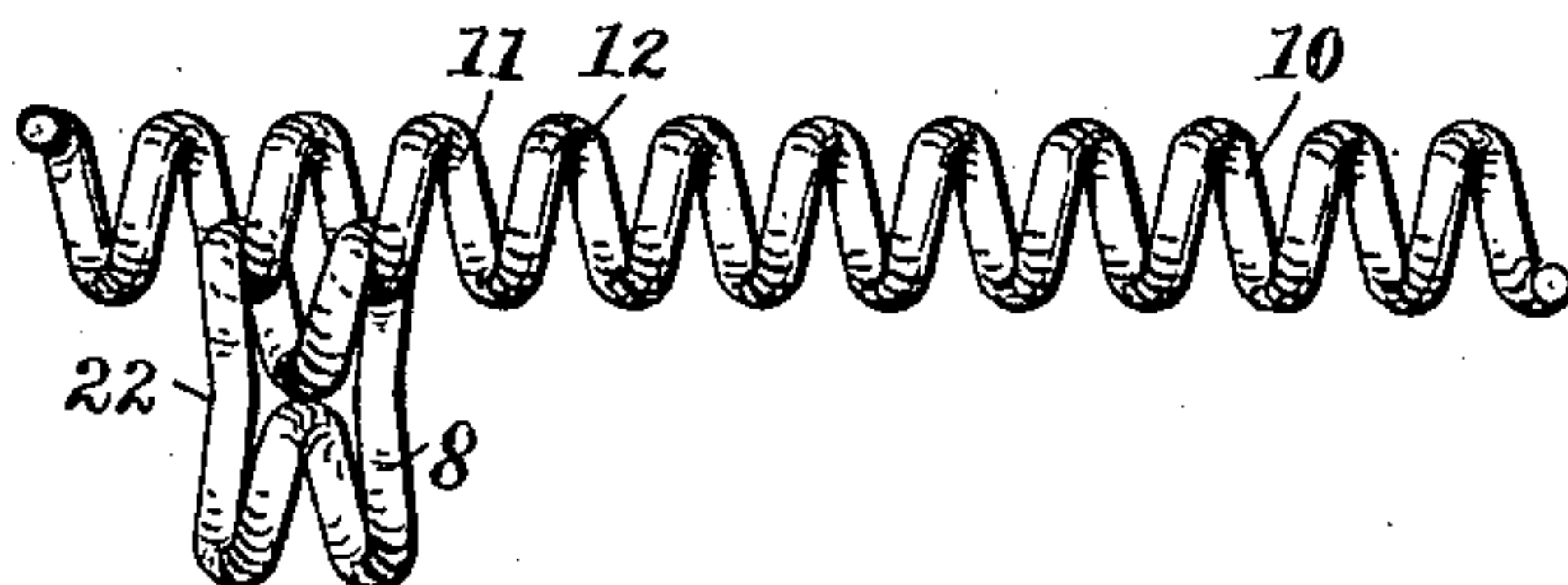


Fig. 4.

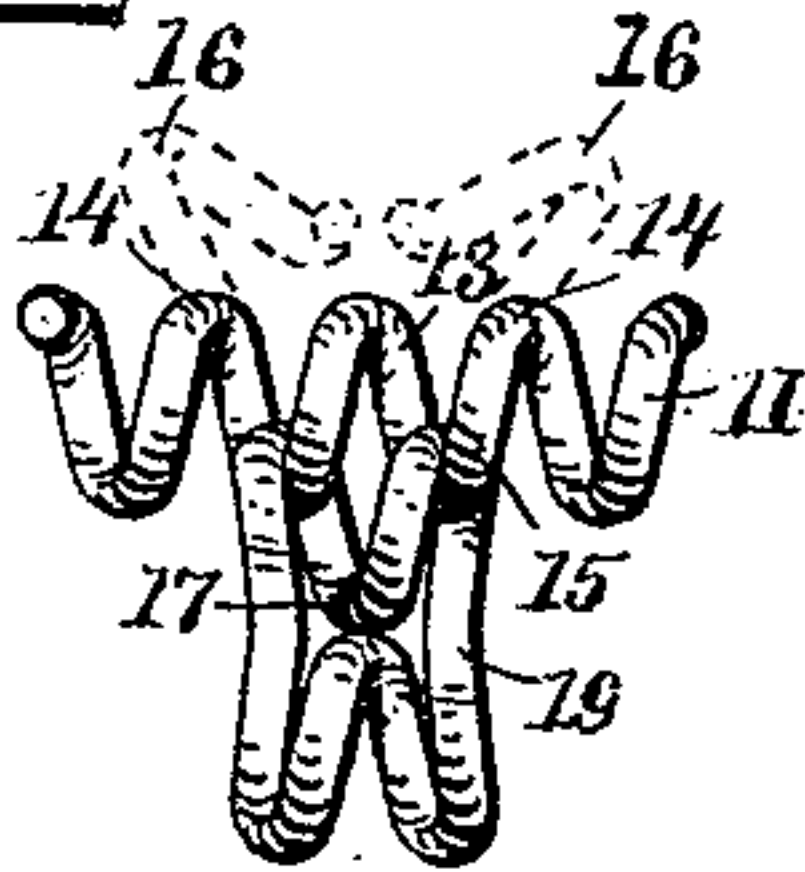


Fig. 5.

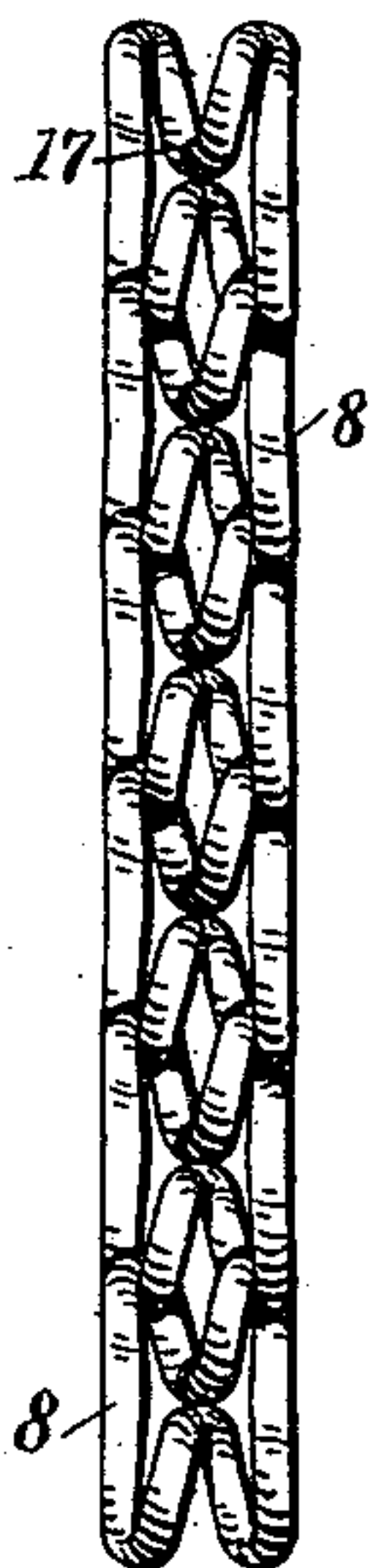
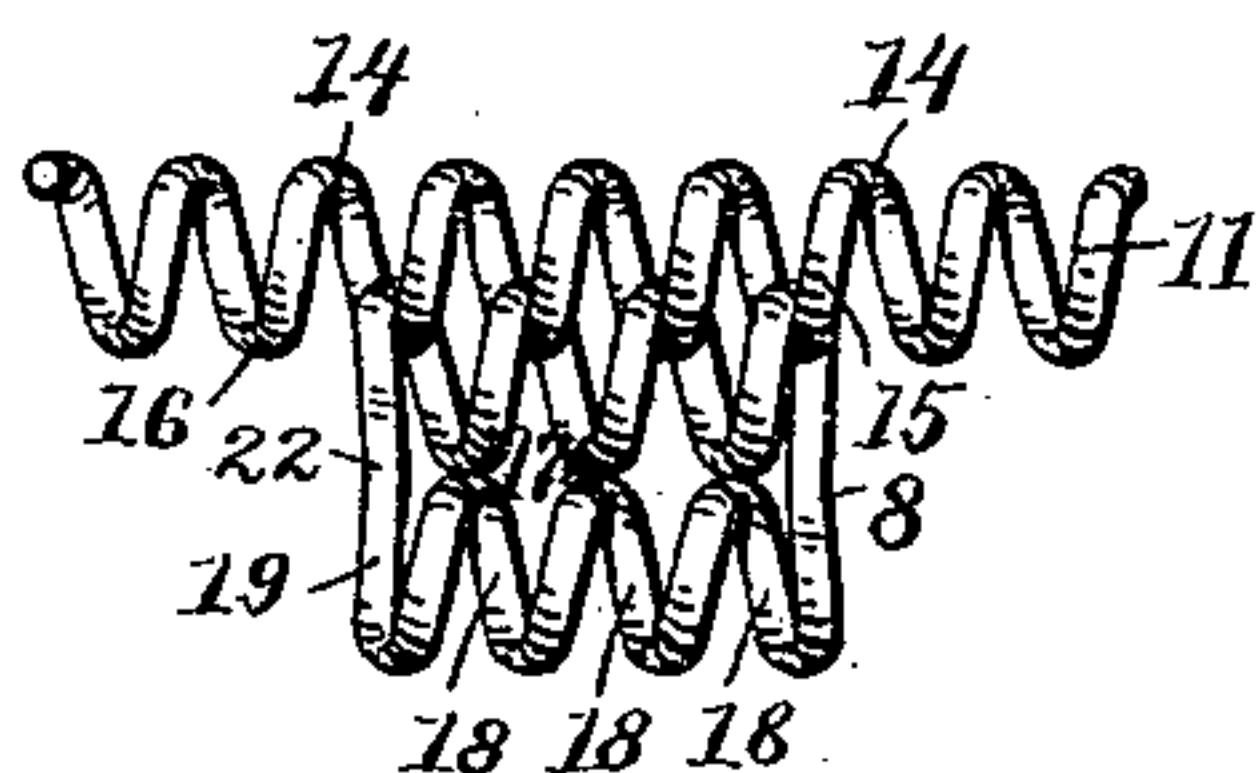


Fig. 6.



Fig. 7.



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# UNITED STATES PATENT OFFICE.

JOSEPH E. CROOK, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO ATWOOD  
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## CHAIN.

SPECIFICATION forming part of Letters Patent No. 354,046, dated December 7, 1886.

Application filed May 14, 1886. Serial No. 202,145. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. CROOK, of the city and county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Chains, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the construction of chains which consist of links looped together and united in a line.

The objects of my invention are to provide a chain that is simple, durable and ornamental in structure, and, moreover, is free from solder.

To the above purposes my invention consists in forming a chain from a spiral of wire, which is cut and bent into peculiarly-shaped links; and, further, in the novel construction and arrangement of certain parts of the device, as hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a full front view of a link of my peculiar construction. Fig. 2 represents a side view of Fig. 1. Fig. 3 represents a front view of the initial link, as shown in Figs. 1 and 2, with a wire spiral screwed or hooked through two of the loops of a coupling end of said link. Fig. 4 represents a similar view as Fig. 3, after the wire spiral has been cut off at a proper length to form the second link. Fig. 5 represents a front view of a portion of a chain composed of my joined-up links. Fig. 6 represents a side view of Fig. 5. Fig. 7 represents a modified form of my links.

In the said drawings like numbers of reference designate corresponding parts throughout.

Referring to the drawings, the wire or material of which the links of my chain are constructed is formed into a continuous wire spiral, 10, which is coiled symmetrically in a cylindrical form. The link 8 is constructed from a part or section, 11, of the spiral 10, consisting of four complete coils or turns, cut at a point, 12, on the spiral. In forming the part or section 11, composed of four complete coils of a spiral, into a link, as 8, the central portion or body, 13, is preserved intact. The

ends of the section 11, to each side of the portion 13, consist of about one and a-half coil each, and are formed up over the intact portion 13 by first bending said end portions at the points 14 into the broken-line position of Fig. 4. From the broken-line position they are bent, at corresponding points, 15, over toward each other, and are then bent at the points 16 slightly, until the free ends of the wire meet, as at a point, 17.

The modified form in Fig. 7 shows the link 8 as formed of a section, 11, of a spiral. The section is here of twice the number of coils of spiral as the primary form—namely, eight coils—and consequently this form presents about three complete coils, 18, at each coupling or locking end of the link for the next entering link to lock or hinge with. The number of coils may in this way be increased at pleasure to vary the breadth and character of the chain.

The chain is constructed from my novel form of link by taking the completed link, as 8, and locking with one coupling end thereof a part or section of spiral or a bent wire strand by screwing or passing the same through the loops or bends of the said coupling ends, as clearly shown in Figs. 3, 4, and 7. When the second part of the spiral is properly set in position by having the ends thereof extending equally to each side of the adjacent or previously formed link, the said ends are bent up together over upon the body or intact central portion of the spiral and formed into a second link similar to the first-described link. In this way any length of chain may be constructed of my links, and without the use of solder. The poles or major axes of the sections of the cylindrical spiral shown as forming the coupling ends of the link lie parallel to each other and normal to the plane of the link, the plane of the link being a plane lying normal to the plane of the face of the sheet of drawings and parallel with the line of length of the chain composed of said links.

The coupling ends of the links where the adjacent link is interlocked are composed of sections of wire formed in perfect spirals having their poles or major axes parallel, and the side bars, 19, of the links are constructed in an



approximately S-shaped symmetrical figure. A side view of the link, as 8, in Figs. 2 and 6, shows the outlines of a perfect figure 8. The poles or major axes, as 20 and 21, of each coupling end spiral are parallel. The side bars, 19, of the links are flexed slightly inwardly at points 22 to give a more graceful outline to the chain.

The manner of constructing a chain from my improved form of link renders the chain a strong one from the fact that the next entering link being coupled or joined at the end containing the free ends of the wire forming the link, it necessarily binds and securely holds the free ends in position together, and prevents any strain on the chain from causing the links to spread or open at their joints. Beyond this advantage the free ends of the material forming the links are concealed and housed by the surrounding structure of the link.

My chain is of simple structure and can be quickly and cheaply made, and presents a pleasing appearance to the eye as an article of jewelry.

There may be various modifications made in the parts of my device without a substantial departure from the spirit of the invention as herein described and claimed. For instance, any form of spiral may be used in preference to the cylindrical form I show—that is, the projection of said spiral or bent wire strand upon a plane normal to the pole thereof may be otherwise than a circular figure, and the projection of said spiral upon a plane parallel to the pole thereof may be otherwise than the uniform zigzag figure illustrated.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A chain-link provided with side bars and having the coupling ends thereof each formed of a section of a spiral wire, said section consisting of one or more turns of the spiral and disposed with the poles or major axes parallel.

2. A chain-link having the side bars formed curved or approximately S shape, and the coupling ends thereof formed of like parts of a similar wire spiral or bent strand, the poles or major axes of said parts of spiral arranged parallel, the free ends of said wire abutting, whereby a continuous structure will be formed.

3. A chain-link constructed from a wire formed into a spiral or strand composed of a series of turns or bends in the wire, said spiral having the ends thereof bent over together upon the body thereof, whereby the complete link may be formed, having the coupling ends thereof consisting of sections of the wire spiral.

4. A chain-link formed from a wire spiral or bent strand of wire, the ends of the spiral bent up over the intact portion or body of the spiral and the free ends of the wire joined, whereby the body or intact portion forms one coupling end and a part of each side bar of the link, and whereby the bent-over ends each forms a part of the other or second coupling end and also the remaining part of the adjacent side bar.

5. The chain-link formed from the cylindrical spiral wire, the outer ends of the spiral bent up together over the central intact portion or body of the spiral, the free ends of wire abutting, whereby the points of bending are about the center of the respective side bars of the link and the body of the spiral forms one coupling end and one half of each side bar of the link, and whereby the bent-over ends each form one-half the other coupling end and the remaining half of the adjacent side bar, the poles or major axes of said spirally-formed coupling ends lying parallel to each other and normal to the plane of the completed link, substantially as described.

6. A chain constructed as follows, viz: first, of a link formed from a wire spiral, the ends of the spiral bent up together over the intact central portion or body of the spiral and the free ends of wire abutting; the central portion of the spiral forming one coupling end and one-half of each adjacent side bar of the link, the bent-over ends forming each one half of the other coupling end and the remaining half of the adjacent side bar; second, of another link formed of a wire spiral screwed through the bends of one coupling end of said first link and having the ends thereof bent up together over the central portion thereof and united, whereby the said central portion forms the interlocking coupling end and one half of each of the adjacent side bars of said second link, and whereby the bent ends form each one half of the other coupling end and the remaining half of the adjacent side bar of said second link, and so on with a series of associated links forming a chain, substantially as described.

7. The chain-link 8, comprising the side bars, 19, and the spiral coupling ends and formed from the part 11 of the cylindrical spiral wire 10, substantially as described.

8. The chain composed of a series of links, as 8, comprising the side bars, 19, and the spiral coupling ends, and formed and interlocked substantially as described.

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Witnesses:

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M. F. BLIGH.